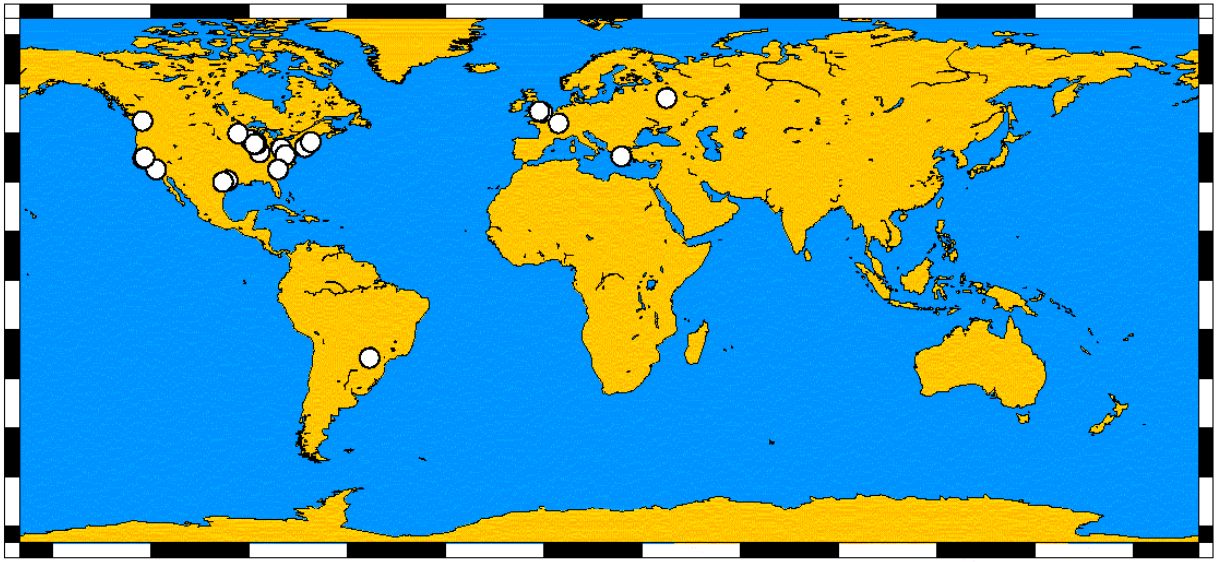
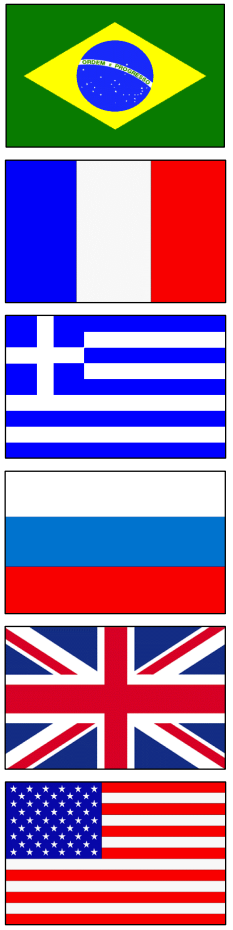
MINOS NEAR DETECTOR

- Status
- Plans for Installation and Commissioning

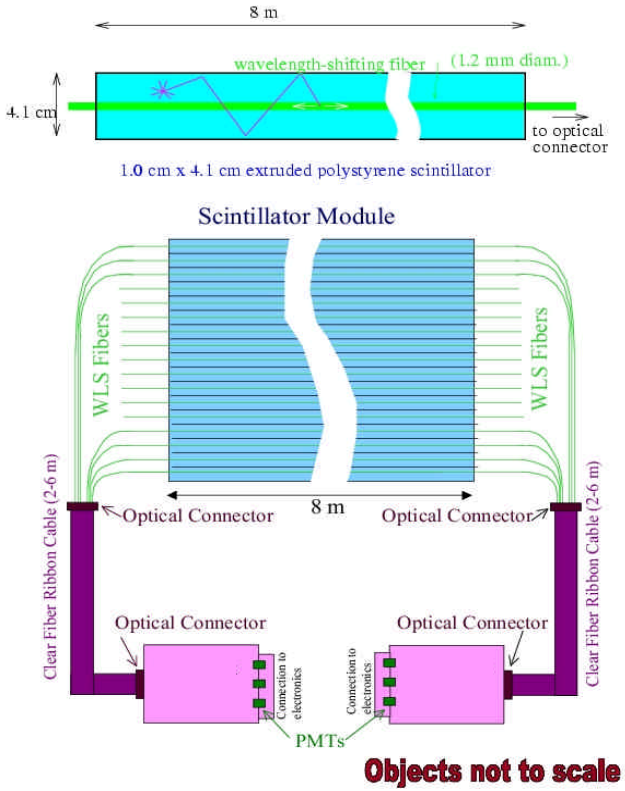




P. Shanahan
FNAL
AlExp 11/17/03

MINOS Detectors

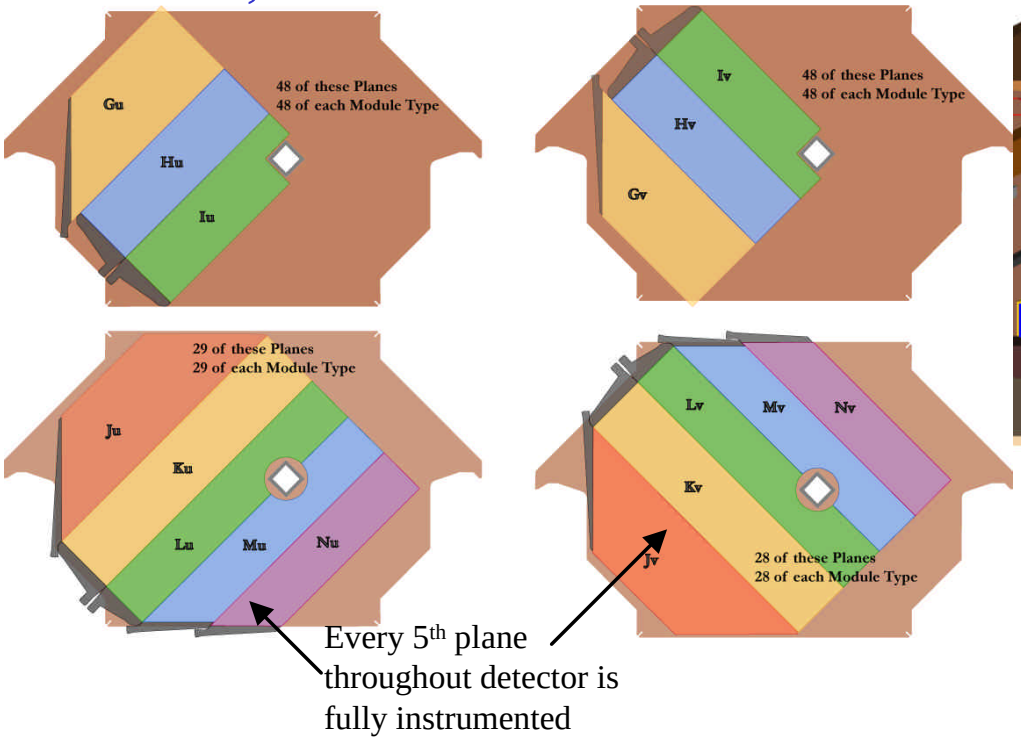
- 1” Fe/1cm plastic scintillator
- 4.1 cm transverse segmentation
- WLS fiber readout into multi-anode PMTs

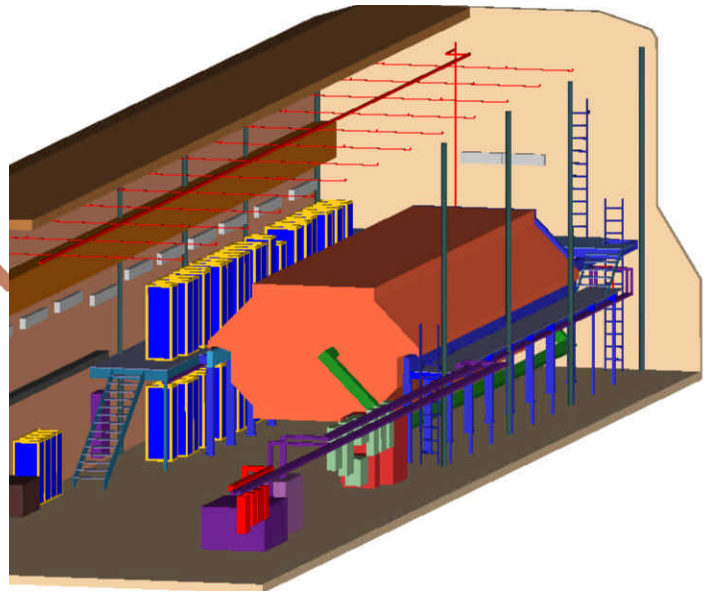


Near Detector readout single ended

Near Detector

- Smaller than Far Detector
- 282 planes (153 scintillator), partial instrumentation
- 980t, 4.8m x 3.8m x 16.6m



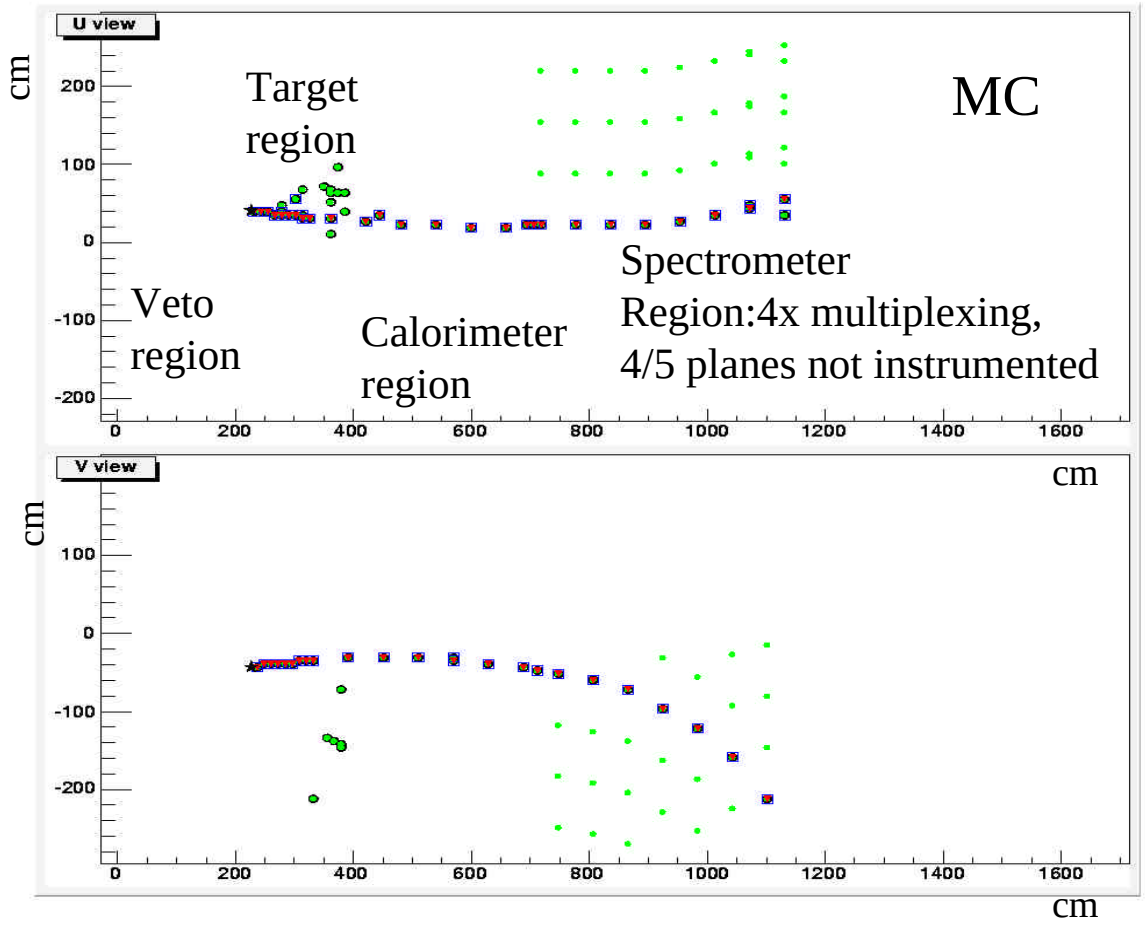


- 1.2T magnetic field

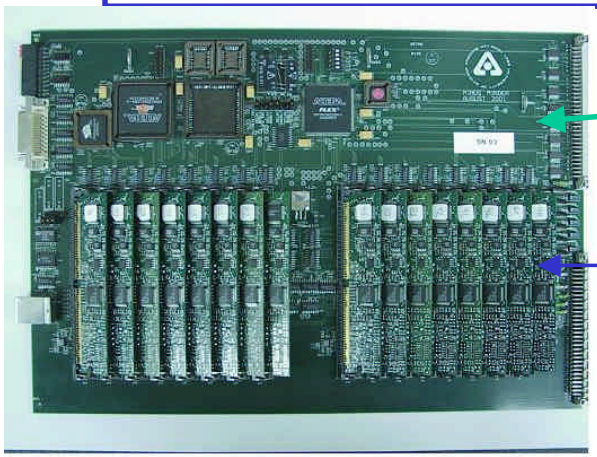
Near Detector Function

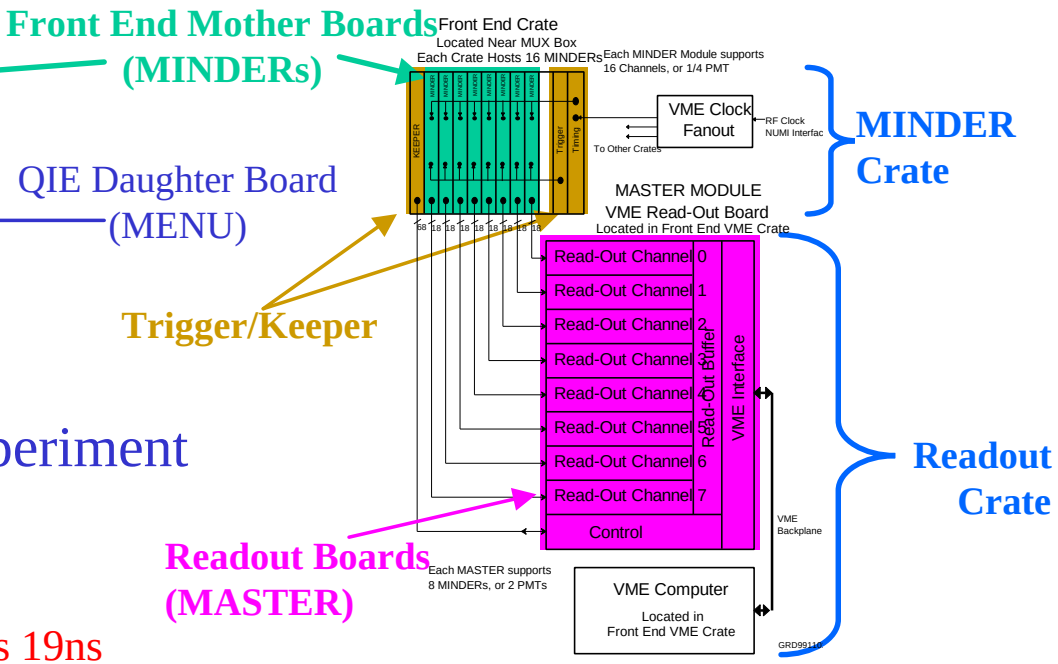
First 120 planes: each plane instrumented

Last 162 planes: multiplexed spectrometer region



Readout Electronics





- High Rate Neutrino Experiment
  - >30 interactions/10μs spill
- QIE based system
  - Multiranging, Deadtimeless 19ns sampling over entire spill
- Electronics Assembly nearly complete
- Checkout >50% complete

Component Count (not counting ~10% spares):

9328 MENUS

583 MINDERS

81 MASTERS

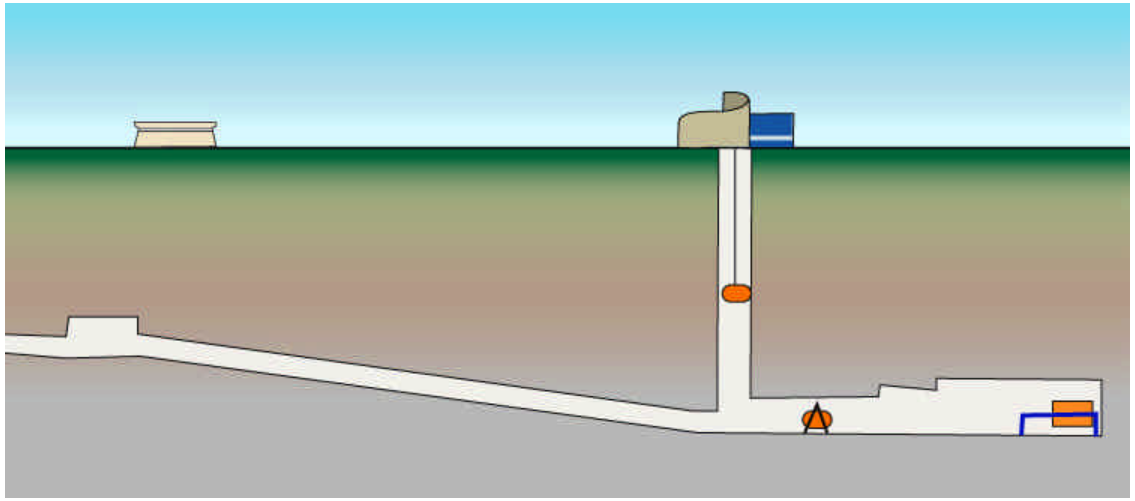
Near Detector Status

- All ND planes ready for installation
  - Staging at New Muon
  - Rack assembly in progress
  - Beneficial Occupancy: Jan. 31, 2004

- Integration tests: 8 spectrometer planes
  - Prior to B.O., test integration of planes, fiber cables, PMTs, electronics, Light Injection
  - Possibly readout with DAQ, schedule permitting

Installation

- Installation expected to start ~ 6-8 weeks after Beneficial Occupancy
- Aim for 2 planes/day
  - Stage from NMS to MINOS Surface Building
  - Expect *O*(30) weeks to complete



Practicing plane manipulation with strongback

Commissioning

- Aim to commission planes as they go in
  - Light leaks
  - basic functioning, operational parameters of scintillator, PMT, electronics, Light Injection system
- Great experience gained at Calibration Detector at CERN
- Hope to demonstrate interactions in 1st few minutes of neutrino beam.